Hypothesis: Avoiding a diverting ileostomy does not influence the long-term overall morbidity and functional outcome of patients after ileoanal pouch operation (IAP).

Design: All patients undergoing IAP were prospectively entered into a database, and those undergoing operation from October 1, 1989, through January 31, 1996, were contacted by mail questionnaire.

Setting: Tertiary referral center.

Patients: One hundred thirty unselected sequential patients.

Interventions: The IAP was completed by a stapled method without diverting ileostomy, provided the patient agreed, and there were no other complicating factors.

Main Outcome Measures: Need for reoperation, fecal leakage, pouch frequency, ability to defer evacuation, pouchitis, and overall quality of life.

Results: Of 102 patients (78.5%) who initially underwent IAP without diverting ileostomy, 10 (9.8%) developed an anastomotic leak and required a diverting ileostomy. Additional surgery was required in 12 (9.2%) of the 130 patients for bowel obstruction and in 3 (2.3%) for pouch excision. Two patients died of unrelated causes, leaving 125 functioning pouches (96.2%). Questionnaires were completed in 111 (88.8%) of the 125; 75 patients (67.6%) reported perfect continence for gas and stool, 10 patients (9.0%), regular nighttime leakage, and 24 patients (21.6%), occasional fecal leakage. Pouch evacuation frequency (±SD) per 24 hours was 7.8 ± 2.4 (range, 4-12), and 95.5% of patients could defer pouch evacuation. Of the 111 patients, 42.3% reported pouchitis, with 7.2% receiving long-term antibiotic therapy. Of the patients, 74.8% reported total satisfaction, and 84.7% regarded themselves as being in perfect health.

Conclusion: Long-term outcome after IAP remains favorable with or without diverting ileostomy.

Ileoanal Pouch Operation
Long-term Outcome With or Without Diverting Ileostomy

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The ileoanal pouch operation (IAP) has increasingly been used for patients who require surgery for ulcerative colitis and familial adenomatous polyposis coli. The purpose of this study was to determine the long-term outcome of IAP with or without a diverting ileostomy (DI).

RESULTS

One hundred thirty patients (66 men and 64 women) underwent IAP during the study period. Three patients had familial adenomatous polyposis coli and 127 patients had ulcerative colitis, 45 (35.4%) of whom had acute colitis. One hundred four patients (80.0%) were receiving corticosteroids, with an average (±SD) dose of 220 ± 125 mg of hydrocortisone (range, 18-800 mg). Of these 104 patients, 6 were also taking mercaptopurine. The remaining 23 patients with ulcerative colitis were not taking corticosteroids at the time of operation. Average age was 34.1 ± 11.9 years (range, 13-70 years). Average follow-up was 75 ± 20 months (range, 43-119 months). One hundred two patients (78.5%) underwent IAP without DI, and 28 patients had a DI because they were considered unsuitable for a single-stage operation (intraoperative technical reasons in 14, patient preference in 7, and serious comorbidity in 7). Of the 102 patients who underwent initial single-stage operation, 10 (9.8%) had leakage and required emergency ileostomy, all of which were eventually closed. Therefore, 92 (70.8%) of 130 patients had a true single-stage operation. During the follow-up period, 2 patients died, 1 of a brain tumor and 1 of pancreatic carcinoma. Three patients required
PATIENTS AND METHODS

The IAP was performed by 2 surgeons (P.M.M. and J.F.C.) with the use of a method that avoids mucosectomy and includes stapling an 8-cm J-pouch to the anorectal junction. Everting the anorectal junction and stapling the rectum with the dentate line under direct vision helps to minimize the amount of columinar mucosa remaining after this procedure.2 We offer patients IAP without DI, provided the surgeon believes there are no intraoperative technical problems, and the patient accepts the morbidity of an early anastomotic leak.

Patient data are prospectively entered into a database. For the purposes of this study, all patients who underwent IAP between October 1, 1989, and January 31, 1996, were asked to complete a questionnaire. The questionnaire was designed to assess the following characteristics: continence for stool, continence for gas, use of motility inhibitors and stool thickeners, frequency and incidence of pouchitis, frequency of pouch evacuation, ability to defer evacuation, sexual or urinary dysfunction, blood in stool, anal irritation, dietary restrictions, need for additional surgery, overall quality of life and satisfaction, and overall health.

pouch excision, for early postoperative pouch necrosis (2 patients) and unsatisfactory pouch function (1 patient). Therefore, 125 of 130 patients were asked to complete questionnaires regarding long-term pouch function. Of the 125 patients, 111 (88.8%) completed questionnaires. Three patients who did not return the questionnaire stated that they were doing well when contacted by telephone. We were unable to contact 11 patients, all of whom had single-stage operations and had been doing well at their most recent follow-up visit. Reported functional results reflect the 111 patients who completed the questionnaire.

Average number of pouch evacuations (±SD) per 24-hour period was 7.8 ± 2.4 (range, 4-12). One hundred five patients (94.6%) reported the need to evacuate during the night on a regular or occasional basis. This was of concern to 16 patients (14.4%). Continence was described as perfect for gas and stool at all times by 75 patients (67.6%). Seventy-nine patients (71.2%) never had stool leakage but occasionally passed flatus inadvertently. Ten patients (9.0%) reported at least some fecal leakage during most nights, and 24 patients (21.6%) reported rare or occasional nighttime leakage. Six patients (5.4%) wore pads at night, and 5 of these also wore them during the day. Of the 111 patients, 106 (93.5%) reported that they could defer pouch evacuation for more than 30 minutes, and 5 patients (4.5%) reported the need to evacuate quickly. Seventy-four patients (66.7%) used motility inhibitors or stool thickeners on a regular or occasional basis. Five patients (4.5%) reported anal irritation, and 4 patients (3.6%) reported blood in the stool on a regular basis. Fifty-seven patients (51.4%) modified their diets to optimize pouch function. Forty-seven patients (42.3%) had experienced a single episode of pouchitis, and 12 patients (10.8%) had experienced several episodes. Eight patients (7.2%) were receiving long-term antibiotic therapy to suppress pouchitis symptoms. There were no discernible differences in long-term pouch function between patients who had undergone a true single-stage IAP, IAP with DI, or IAP with emergency ileostomy for early anastomotic leak.

Reoperation was required in 22 (16.9%) of 130 patients, for bowel obstruction in 12, for gallstones in 5, and for replacement of ileostomy, pouch removal, repair of incisional hernia, enterocutaneous fistula, and pouch perforation in 1 each. Bowel obstruction not requiring operation was seen in 11 additional patients (8.5%). Laparoscopic cholecystectomy was possible in 4 of 5 patients with symptomatic gallstones.

Of the 111 patients who completed questionnaires, 83 (74.8%) reported normal quality of life and total satisfaction after IAP, and 94 patients (84.7%) considered themselves to be in perfect health. There were no cases of impotence or ejaculatory disorders in men, and 2 women were concerned about stool leakage during intercourse. There were no reports of infertility, and 5 women gave birth successfully, 3 by cesarean section and 2 by vaginal delivery. Fifty-six patients (50.5%) had no dietary restrictions, and the remainder avoided certain foods and eating late at night to reduce the need to empty the pouch at night.

The ileoanal pouch procedure has increasingly been performed for ulcerative colitis and familial adenomatous polyposis coli to avoid a permanent ileostomy. There have been several reports of long-term pouch function after operations that include mucosectomy but relatively few after nonmucosectomy stapled methods.1-3 Although we recognize the limitations of a questionnaire, this was the most direct means of obtaining data from our patients in a limited time. The questionnaire was simple to interpret and was completed by 88.8% of the patients. Review of follow-up records, and telephone calls to patients who did not complete the questionnaire, did not raise concern that inclusion of such patients would significantly alter the results. The results of this study show that pouch function remains satisfactory in patients 4 years after operation with or without diverting ileostomy. The infrquent use of pads by our patients (3.4%) is quite different from some reports after IAP, in which up to 20% to 30% of patients used pads.6,6 The infrequent use of anal irritation is also a reflection of excellent continence and minimal stool leakage. In our experience, the most common reason for late-onset fecal leakage or increased frequency of evacuation is pouchitis, and treating pouchitis often relieves both symptoms. Pouchitis can be an insidious condition with minimal overt symptoms, and patients may suffer a steady deterioration in pouch function without complaint unless they are warned of this condition. The frequency of pouchitis in our series is very likely to be overstated, as the diagnosis and decision to treat are almost always made on a clinical basis, often as the result of a telephone conversation. We recognize that

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the only accurate way of diagnosing pouchitis is by endoscopy and biopsy.\(^1\) We find it is impractical to insist on performing pouchoscopy before treating symptoms of acute pouchitis, reserving this for cases that are recurrent or chronic.

There is no question that avoiding a DI places the patient at risk for the consequences of an unprotected anastomotic leak.\(^6\) However, as previously reported, we have been able to avoid long-term effects on pouch function by recognizing and treating this complication expeditiously.\(^7\) Although anastomotic leak after IAP without DI has been treated by draining the pouch via an indwelling Foley catheter,\(^8\) we prefer to place an ileostomy. Unfortunately, we are unable to identify factors that predispose patients to anastomotic leak. Disease activity, carcinoside dosage, and use of immunosuppressants do not appear to be important factors. Although it might be expected that patients undergoing IAP without DI would be troubled by excessive pouch function in the early postoperative period, we have largely avoided this problem with the liberal use of motility inhibitors and stool thickeners.

We minimize the amount of remaining columnar epithelium by everting the anorectum and stapling the rectum with the dentate line in view. This remnant remains amenable to subsequent follow-up by endoscopy. We do not advocate the stapled approach in patients with rectal dysplasia or carcinoma elsewhere in the colon, preferring a mucosectomy in those patients or even avoiding a pouch altogether.

We therefore continue to offer patients the option of a single-stage IAP, provided there are no serious comorbid conditions, and if the patient and the family clearly accept the risk of an early postoperative anastomotic leak, which would require additional surgery. The theoretical risk of infertility in women because of pelvic sepsis, which could follow anastomotic leakage, has so far not been realized in our patients, but it should certainly be part of the preoperative discussion.


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REFERENCES


DISCUSSION

James M. Becker, MD. Boston, Mass.: Despite the fact that over the last 20 years ileal pouch–anal anastomosis has become the operation of choice for patients with ulcerative colitis and familial polyposis, there remain a number of controversies or areas of uncertainty in this field, many of which were brought up today. The focus of this study was to look at whether or not a diverting ileostomy is appropriate. Obviously, if an ileostomy is not done, this eliminates an additional operation, that is, ileostomy closure. This is very attractive to patients and, in some cases, to referring physicians. On the other hand, the price of eliminating the ileostomy may be high. The biggest problem is not being certain how to select patients to either have or not to have a diverting ileostomy. I think the study as reported today by Dr Mowschenson is helpful in that it shows that in selected patients, with an average of 6 years of follow-up, undergoing ileocolonic anastomosis without a diverting ileostomy, the overall result appears to be satisfactory.

On the other hand, there are a number of things that I am uncertain about based upon this study. One of the major weaknesses is that this is a study that had no control group. Consecutive patients were included without clear-cut criteria as to which patients would receive which type of therapy. The data were reported as overall results. They were not stratified by the study population, that is, those patients undergoing ileostomy versus those that were not. I would like to ask Dr Mowschenson to try to break out the data into those 2 populations.

There are other things that I find puzzling. One is the overall stool frequency, which is higher than in nearly any other series, with almost 8 bowel movements over 24 hours. In view of this, I would ask Dr Mowschenson about his continued use of the ileostomy. I am also uncertain about the high incidence of pouchitis, especially the chronic refractory type of pouchitis.

There are some inconsistencies in the data that I had some difficulty in interpreting, especially from the manuscript. For example, it’s reported that 68% of patients had “perfect” functional results, whereas in another portion of the results section, it’s reported that 71% of patients passed flatus inadvertently. What is the explanation for the differences in data? I’m wondering if part of the problem isn’t that a standardized and validated questionnaire was not utilized in this study as has been used in some centers throughout the world.

Finally, I’m interested in the short-term results that were not reported. In those patients who were operated upon with or without a diverting ileostomy, there were differences in hospital stay, overall cost, and pouch function early on as well as the psychological and quality-of-life factors in the early postoperative period, particularly since about 12% of the nonileostomy patients failed and required a later ileostomy. I think the study as reported today by Dr Mowschenson is helpful in that it shows that in selected patients, without a diverting ileostomy, the overall result appears to be satisfactory.

Dr Becker’s concerns and I wanted to share my experience. I have personally performed about 150 of these operations over the past 8 years, and I would say in my practice the incidence
of indication for ileostomy is the opposite. In other words, I would probably omit an ileostomy in about 20% of patients, who are younger than 40 to 45 years old, in good nutritional condition, not anemic, not immune suppressed, and on a low or minimal dose of or no steroids. So we have tried to stratify the risk. In our experience, the leak rate has been 1%, and, interestingly, we had 1 anastomotic leak in a patient after a diverting ileostomy and 1 without a diverting ileostomy. In both cases the morbidity was not negligible. There is also data from Leeds indicating that the pouch function may actually be significantly affected by an anastomotic leak. So I wonder if a 10% anastomotic leak rate is to be considered acceptable. Although patients and their families understand the risk preoperatively, it still seems to be a risk that increases significantly the overall morbidity and cost of this operation.

Jeffrey L. Cohen, MD, Hartford, Conn: I want to second some of what Dr Pricolo just said. I’m wondering, we have a selected group of patients here in whom no diverting ileostomy was used, and yet there is still a 10% leak rate. There is no mention about the added morbidity and the statistics regarding that group of patients. As we all know, anastomotic leak can be a horrible complication, especially in this group of patients, many of whom are on steroids. With over 200 of these operations performed, we have the exact opposite numbers. We’re only performing a 1-stage operation in 20% of our patients. As we have had a couple of leaks ourselves, we have become less enthusiastic about trying to do this all in 1 stage. For a lot of these sick patients, both physically as well as emotionally, I think the best chance for a good result is to do the ileoanal pouch procedure in a staged manner. So I’d like some information about the 10% of patients who experienced a leak and especially the 3 losses of pouches.

Dr Mowschenson: If I could work from the back. The losses of the 3 pouches were purely technical errors early on in the series. Those would be acute losses, and they were nothing to do with the diverting ileostomy being omitted.

As far as stratifying the patients according to risk, we set out to do this operation in 1 stage, so we did take all comers, and we have a higher rate of nondiversion than other centers.

We have studied the patients who have leaked, and from what we can tell, if we deal with them very promptly, operate on them, irrigate out the pouch and the pelvis, and place a diverting ileostomy, many of those patients are home within 3 days of that procedure. They do not remain in the hospital for a long time. We have also had the experience, in diverted patients, of having them leak in the presence of a diverting ileostomy and develop severe pelvic complications. A diverting ileostomy does not in itself necessarily protect from that.

Jim, I’m sorry if you misunderstood the continence issue. Sixty-eight percent of the patients were perfectly continent for gas and stool. Seventy-one percent of the patients were perfectly continent for stool, the difference being the 3%, those who inadvertently leaked gas. So it wasn’t as though 71% leaked flatus. Sorry about that confusion.

As far as chronic pouchitis is concerned, our series overstates the incidence of pouchitis because it’s almost always a clinical diagnosis and we based it upon the response to antibiotics.

As far as the number of bowel movements are concerned, the number of bowel movements that the patient reports is a difficult number to get hold of because women tend to move their pouches when they pass urine, so the question isn’t how many times do you need to move your bowels a day but how many times you do, and so the difference between 6, which is commonly reported, and 8 is actually not that great, and I don’t think it’s related to pouch size because our pouch is less than half the size of many pouches and yet our pouch movements are not twice as frequent. I believe that this is a completely unselected group of patients and some of them had pouchitis, so that when we saw these results and saw the patient, for example, who was moving his bowels 12 times a day, we called him up and asked him to start antibiotics and that improved.

But the numbers are the numbers we got from the survey, and they vary from time to time depending upon the prevalence of pouchitis in these patients. Pouchitis is probably the commonest cause for deteriorating pouch function and incontinence.

As far as the early response to surgery, these patients actually perform amazingly well early on. The troubles begin later, not early.